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# REVIEWS

## *The Fauna of the Moorefield Shale of Arkansas.* By GEORGE H. GIRTY. U.S. Geol. Survey Bull. 439. 1911. Pp. 148; pls. 15.

In 1895 Professor H. S. Williams[1] called attention to the recurrence of certain Devonian types of fossils in beds of Mississippian age in Arkansas, the formation containing these recurrent species being that which has since come to be called the Moorefield shale. At still an earlier date McChesney[2] described several species from this formation near Batesville, Arkansas, referring them to the age of the Hamilton group of New York, because of the manifest similarity between these species and certain Hamilton forms. Because of this unexpected reappearance of Devonian genera of invertebrate fossils in the Moorefield shale, this fauna is of especial interest to students of Mississippian paleontology, and the full discussion of the fauna, with descriptions and illustrations of all the species, is a welcome contribution to our literature.

The stratigraphic position of the Moorefield shale is between the Boone chert below and the Batesville sandstone above, it being separated from the subjacent formation by an unconformity. The complexion of the fauna is quite different from that of any of the formations of the standard Mississippian section of the Mississippi Valley, and consequently the correlation of Moorefield shale is not a perfectly simple matter. Dr. Girty has followed the usual custom of those who have given some study to the fauna, in considering it to represent a time about equivalent to the St. Louis limestone of the standard section. One of the most interesting features of the fauna is its relationship to the early Carboniferous faunas of Nevada, a relationship first pointed out by Williams. The forms which most clearly suggest this relationship are *Liorhynchus carboniferum*, *Productella hirsutiformis*, and *Moorefieldella eurekensis*. Another fauna with which that of the Moorefield shale is compared by Dr. Girty, is the fauna of the Caney shale of Oklahoma, a formation whose age is subject to a wide difference of opinion: Dr. Girty is of the opinion that it is Mississippian in age, while others believe it to be of Pennsylvanian age on account of the presence of certain plant remains of apparent Pottsville age in beds subjacent to the Caney shale. The final correlation of the Mississippian faunas of northwestern Arkansas and Oklahoma must rest until much more investigation upon them has been completed.

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[1] *Am. Jour. Sci.*, 3d ser., XL, 94–101.

[2] *Descriptions of New Species of Paleozoic Fossils* (1860).

S. W.

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*The Early Paleozoic Bryozoa of the Baltic Provinces.* By RAY S. BASSLER. U.S. National Museum Bulletin 77.

In this paper the stratigraphy of the Ordovician and the lower part of the Silurian rocks of the Baltic provinces is considered briefly and the bryozoan fauna is described and figured. Complete faunal lists of the formations are also given.

The Paleozoic rocks of this region have usually been considered as representing a complete section of the Cambrian, Ordovician, and Silurian systems, with the exception of the Middle Cambrian. The bryozoan faunas indicate, however, that instead of the whole of the Ordovician being present only the Beekmantown (Canadian of Ulrich), the Black River (of Ulrich), and the earliest Trenton are represented. The Lyckholm and Bornholm beds, which have been hitherto correlated with the Utica, are believed to be of Richmond age and are placed at the base of the Silurian.

For the purpose of comparison, the stratigraphy of the Upper Mississippi Valley region is reviewed and the bryozoan faunas of these formations are considered briefly. Reference is made to the strata and faunas of the same age in Arctic America. From the comparison of the faunas, it is decided that the faunas of the Ordovician and the early Silurian of the Baltic provinces and of central and northern America were derived from the Arctic region. The resemblance between the faunal elements requiring shore-line conditions for migration is strong but not nearly so marked as in the types not dependent on these conditions. The resemblance is especially marked in the case of the bryozoa, for out of the 237 species found in the Ordovician and Richmond beds of the Baltic region, 86, or over one-third, are also known from America, and many others are closely allied forms.

The greater portion of the bulletin is taken up with the description of some 200 species of bryozoa. The figures for each species are inserted in the text, and this should prove a great advantage over the usual method of separating the description and the figures. The figures, although printed on rather soft paper, are, with few exceptions, very clear, and there should be no trouble in using them for identification.